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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,583	12/15/2003	Hidetoshi Andou	2923-595	2600

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ROTHWELL, FIGG, ERNST & MANBECK, P.C.  
1425 K STREET, N.W.  
SUITE 800  
WASHINGTON, DC 20005

EXAMINER

ALLEN, MARIANNE P

ART UNIT PAPER NUMBER

1647

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



**Office Action Summary**

Application No.

10/734,583

Applicant(s)

ANDOU ET AL.

Examiner

Marianne P. Allen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-8 and 11-15 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/331,948; 10/048,458; 09/701,121.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_



## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Group I, claims 1-8 and 11, in the reply filed on 9/13/2006 is acknowledged. The traversal is on the ground(s) that there is no burden of search. This is not found persuasive because burden of search was established in the last Office action. The methods of claims 12-15 are classified differently, contain additional limitations, and require a non-coextensive search.

The requirement is still deemed proper and is therefore made FINAL.

Claims 12-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9/13/2006.

### ***Claim Objections***

Claim 7 is objected to because of the following informalities: the claim contains a typographical error, "isoeletric." Appropriate correction is required.

### ***Priority***

Applicant is requested to clarify the specific reference to the prior-filed applications the first sentence(s) of the specification following the title. It is noted that the sentence inserted in the response submitted 10/22/2004 does not exactly correspond to the information provided in the response submitted 12/30/2004. Applicant is further requested to update the status of the applications referred to in this sentence and correct the typographical error, "09,701,121."



***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8 and 11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,551,801 B1.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims recite substantially the same method steps a) - c) for producing both a purified monomeric and a purified dimeric bone morphogenetic factor, and the preambles do not breathe life and meaning into either the patented or instant claims because substantially the same method steps can be used to make either purified monomeric or dimeric bone



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morphogenetic factors (in actuality, the procedures recited would technically produce a mixture of monomeric and dimeric bone morphogenetic factors, and the exact proportion of monomers to dimers would be dependent upon the specific conditions used). In addition, the patented claims are a sub-genus of the instant genus claims because the patented claims are limited to a final protein concentration of 1.6 mg/ml up to 5 mg/ml (or above 1 mg/ml in the case of instant claim 11), and the instant genus claims are not limited to this smaller sub-generic range of protein concentration, but the patented sub-generic claims are completely encompassed by the instant generic claims. Therefore, a species-genus relationship exists between the patented claims and the instant claims, and the patented claims render the instant claims obvious because the patented claims anticipate the instant claims and the patented species or sub-genus renders the instant genus claims obvious. See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any



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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfman et al. (US 5,399,677) in view of Cerletti et al. (EP 0433225 A1).

Wolfman teaches a process for producing dimeric BMP-2 in 1% acetic acid from *E. coli* using 1-2 M urea or 1-1.5 M guanidine, which is subsequently purified by reverse phase chromatography (column 12, lines 3 to column 14, line 11). Wolfman does not teach the production of monomeric BMP-2 per se.

Cerletti teaches the production of monomeric members of the TGF- $\beta$  superfamily, including the BMPs (page 4, line 29 to page 8, line 21) and Example 4. It would have been obvious for one of ordinary skill in the art at the time the invention was made to have combined the references to arrive at the instant invention because the motivation to combine the references is explicitly suggested by the references themselves because both references disclose the usefulness of making monomers in order to produce biologically active and useful homodimers or heterodimers (Wolfman, column 8, line 28 to column 10, line 15; Cerletti, page 8, lines 19-24).

Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfman et al. (US 5,399,677) in view of Cerletti et al. (EP 0433225 A1) as applied to claims 1-3, 6, and 8 above, and further in view of Morishita et al. (U.S. 5,840,518).



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Wolfman and Cerletti are applied as above but do not teach isoelectric precipitation or ultrafiltration for purification of proteins produced in bacteria.

Morishita et al. teaches methods of purifying refolded proteins, including ultrafiltration and isoelectric precipitation, in column 12, lines 20-36. It would have been obvious to one of ordinary skill in the art to combine the teachings of Wolfman et al. and Cerletti et al. as discussed above with those of Morishita et al. to denature, refold, and purify BMPs as instantly claimed. One of ordinary skill in the art would have been motivated to do so because Wolfman et al. and Cerletti et al. teach methods of extracting and renaturing BMPs and Morishita et al. teaches purification methods for renatured proteins; thus, one of ordinary skill would have expected a combination of the methods taught to have been successful.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne P. Allen whose telephone number is 571-272-0712. The examiner can normally be reached on Monday-Friday, 5:30 am - 2:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Marianne P. Allen  
Primary Examiner  
Art Unit 1647

mpa